36. (New) A method for vacuum-coating a substrate using a plasma CVD, comprising the steps of:

applying a substrate voltage to the substrate during a coating of the substrate in order to control ion bombardment, the substrate voltage being a direct voltage pulsed in a bipolar fashion, positive pulses and negative pulses of the substrate voltage being independently adjustable of one another according to at least one of a chronological length and a chronological height;

producing the substrate voltage and a coating plasma independently of one another; and

modifying the substrate voltage during the coating of the substrate.

A2

37. (New) The method according to claim 36, wherein the substrate voltage has a frequency of 0.1 kHz to 10 MHz.

38. (New) The method according to claim 36, wherein the substrate voltage has a frequency of 1 kHz to 100 kHz.

39. (New) The method according to claim 37, further comprising the step of:

superimposing a direct voltage on the substrate voltage.

40. (New) The method according to claim 37, wherein the substrate voltage has voltage-free pause times between the positive pulses and the negative pulses of the substrate voltage, the voltage-free pause times ranging from 0 msec to 1 msec.

41. (New) The method according to claim 41, wherein the voltage-free pause times range from 2 μsec to 100 μsec.

42. (New) The method according to claim 40, wherein one of

the voltage-free pause times after a negative pulse is shorter than one of the voltage-free pause times after a positive pulse.

43. (New) The method according to claim 36, further comprising the step of:

adding gases of different types and in various combinations during the coating.

44. (New) The method according to claim 42, further comprising the step of:

performing one of the steps of conducting added gases through a plasma source and introducing the added gases near the plasma source.

A2 CONT'D

45. (New) The method according to claim 42, further comprising the step of:

using as a reactive gas one of:

C_XH_Y,

silanes and siloxanes,

noble gases,

metallo-organic compounds, and

a combination of at least two of C_XH_Y, silanes and siloxanes, noble gases, and metallo-organic compounds.

46. (New) The method according to claim 45, wherein C_XH_Y includes C_2H_2 and CH_4.

47. (New) The method according to claim 45, wherein silanes and siloxanes include one of SiH_4 and HMDS and derivates.

48. (New) A device for vacuum-coating a substrate, comprising:

a vacuum recipient;

a bearing device for reception of the substrate;

a first arrangement for producing a plasma in an interior of the vacuum recipient; and

a voltage supply device for producing a substrate voltage applied to the substrate, the voltage supply device being separately controllable from the first arrangement, the voltage supply device being a direct-voltage power supply pulsed in a bipolar fashion, at least one of lengths and heights of positive pulses of the substrate voltage and negative pulses of the substrate voltage being separately adjustable from one another.

A2 cont'

49. (New) The device according to claim 48, wherein the first arrangement includes a microwave source, a sputter cathode, a hollow cathode, and one of a high-frequency source and a second arrangement for producing a high-current arc.

50. (New) The device according to claim 48, wherein the voltage supply device includes a bias power supply unit pulsed in a bipolar fashion.

51. (New) The device according to claim 48, wherein the device is operated as a pass-through arrangement, the substrate being one of unmoved, moved in a uniform fashion, and moved in pulsed fashion.

52. (New) The device according to claim 48, wherein the first arrangement is operated in a pulsed fashion.

53. (New) A method for vacuum-coating a substrate using a plasma CVD, comprising the steps of:

applying a substrate voltage to the substrate during a coating of the substrate in order to control ion bombardment, the substrate voltage being a direct voltage

pulsed in a bipolar fashion, positive pulses and negative pulses of the substrate voltage being independently adjustable of one another according to at least one of a chronological length and a chronological height;

producing the substrate voltage and a coating plasma independently of one another;

modifying the substrate voltage during the coating of the substrate; and

manufacturing a carbon layer using a device including:

a vacuum recipient,

a bearing device for reception of the substrate,

A2 cont.

an arrangement for producing a plasma in an interior of the vacuum recipient, and

a voltage supply device for producing the substrate voltage applied to the substrate, the voltage supply device being separately controllable from the arrangement.

54. (New) The method according to claim 53, wherein the carbon layer is an amorphous carbon layer.

55. (New) A method for vacuum-coating a substrate using a plasma CVD coating, comprising the steps of:

applying a substrate voltage to the substrate during a coating of the substrate in order to control ion bombardment, the substrate voltage being a direct voltage pulsed in a bipolar fashion, positive pulses and negative pulses of the substrate voltage being independently adjustable of one another according to at least one of a chronological length and a chronological height;

producing the substrate voltage and a coating plasma independently of one another;

modifying the substrate voltage during the coating

of the substrate; and

manufacturing a silicon layer using a device including:

a vacuum recipient,

a bearing device for reception of the substrate,

an arrangement for producing a plasma in an interior of the vacuum recipient, and

a voltage supply device for producing the substrate voltage applied to the substrate, the voltage supply device being separately controllable from the arrangement.

A2 CONT'

56. (New) The method according to claim 55, wherein the silicon layer is an amorphous silicon layer.

57. (New) A method for vacuum-coating a substrate using a plasma CVD coating, comprising the steps of:

applying a substrate voltage to the substrate during a coating of the substrate in order to control ion bombardment, the substrate voltage being a direct voltage pulsed in a bipolar fashion, positive pulses and negative pulses of the substrate voltage being independently adjustable of one another according to at least one of a chronological length and a chronological height;

producing the substrate voltage and a coating plasma independently of one another;

modifying the substrate voltage during the coating of the substrate; and

manufacturing a multilayer coating structure using a device, the multilayer coating structure including a layer containing metal for imparting adhesion and an amorphous carbon layer applied on the layer containing metal, transitions to the layer containing metal corresponding to gradients over at least one-fifth of a

thickness of at least one of the layer containing metal and the amorphous carbon layer, the device including:

a vacuum recipient,

a bearing device for reception of the substrate,

an arrangement for producing a plasma in an interior of the vacuum recipient, and

a voltage supply device for producing the substrate voltage applied to the substrate, the voltage supply device being separately controllable from the arrangement.

A2 Cont

58. (New) A method for vacuum-coating a substrate using a plasma CVD coating, comprising the steps of:

applying a substrate voltage to the substrate during a coating of the substrate in order to control ion bombardment, the substrate voltage being a direct voltage pulsed in a bipolar fashion, positive pulses and negative pulses of the substrate voltage being independently adjustable of one another according to at least one of a chronological length and a chronological height;

producing the substrate voltage and a coating plasma independently of one another;

modifying the substrate voltage during the coating of the substrate; and

depositing a layer system containing one of silicon, boron, nitrogen, oxygen, carbon, a metal, and a combination of at least two of silicon, boron, nitrogen, oxygen, and a metal by using a device including:

a vacuum recipient,

a bearing device for reception of the substrate,

an arrangement for producing a plasma in an interior of the vacuum recipient, and

a voltage supply device for producing the

substrate voltage applied to the substrate, the voltage supply device being separately controllable from the arrangement.

59. (New) A method for vacuum-coating a substrate using a plasma CVD, comprising the steps of:

applying a substrate voltage to the substrate during a coating of the substrate in order to control ion bombardment, the substrate voltage being a direct voltage pulsed in a bipolar fashion, positive pulses and negative pulses of the substrate voltage being independently adjustable of one another according to at least one of a chronological length and a chronological height;

producing the substrate voltage and a coating plasma independently of one another;

modifying the substrate voltage during the coating of the substrate; and

manufacturing a multilayer structure of alternating individual layers using a device including:

a vacuum recipient,

a bearing device for reception of the substrate,

an arrangement for producing a plasma in an interior of the vacuum recipient, and

a voltage supply device for producing the substrate voltage applied to the substrate, the voltage supply device being separately controllable from the arrangement.

A2 cont

60. (New) A multilayer structure, comprising:

hard material individual layers; and

one of carbon individual layers and silicon individual layers, the hard material individual layers alternating with the one of the carbon individual layers and the silicon individual layers, the multilayer

structure being manufactured by:

applying a substrate voltage to the substrate during a coating of the substrate in order to control ion bombardment, the substrate voltage being a direct voltage pulsed in a bipolar fashion, positive pulses and negative pulses of the substrate voltage being independently adjustable of one another according to at least one of a chronological length and a chronological height,

producing the substrate voltage and a coating plasma independently of one another, and

modifying the substrate voltage during the coating of the substrate.

A2 cont

61. (New) The multilayer structure according to claim 60, wherein the carbon individual layers include one of:

amorphous carbon containing hydrogen,

amorphous hydrogen-free carbon,

carbon containing silicon, the carbon containing silicon including one of carbon containing hydrogen and hydrogen-free carbon, and

carbon containing metal, the carbon containing metal including one of carbon containing hydrogen and hydrogen-free carbon, the metal being selected from a group including hard secondary group metals.

62. (New) The multilayer structure according to claim 60, wherein the silicon individual layers include one of:

an amorphous silicon contain hydrogen,

an amorphous hydrogen-free silicon,

a silicon containing carbon, the silicon containing carbon including one of carbon containing hydrogen and hydrogen-free carbon, and

a silicon containing metal, the silicon containing metal including one of silicon containing hydrogen and

hydrogen-free silicon.

63. (New) The multilayer structure according to claim 60, wherein the hard material individual layers include one of a metal, a metal compound, carbon containing metal carbide, silicon containing metal, and a mixture of at least two of a metal, a metal compound, carbon containing metal carbide, and silicon.

64. (New) The multilayer structure according to claim 63, wherein the metal is one of tungsten, chromium, titanium, niobium, and molybdenum.

65. (New) The multilayer structure according to claim 63, wherein the metal compound includes a metal carbide, a metal nitride, a metal silicide, a metal corbonitride, a metal carbosilicide, and a metal sliconitride.

A2 cont

66. (New) The multilayer structure according to claim 60, wherein the individual layers of the multilayer structure include one of:

at least one type of the hard material individual layers; and

at least one type of one of the carbon individual layers and the silicon individual layers.

67. (New) The multilayer structure according to claim 66, further comprising:

one type of the hard material individual layers; and

one type of the one of carbon individual layers and the silicon individual layers.

68. (New) The multilayer structure according to claim 60, wherein a thickness of at least one of the hard material individual layers and the one of the carbon individual layers

and the silicon individual layers is between approximately 1 nm and approximately 10 nm.

69. (New) The multilayer structure according to claim 68, wherein a thickness of at least one of the hard material individual layers and the one of the carbon individual layers and the silicon individual layers is approximately 2 nm and approximately 5 nm.

70. (New) The multilayer structure according to claim 60, wherein an overall thickness of the multilayer structure is between approximately 1 μm and approximately 10 μm.

A2 cont.

71. (New) The multilayer structure according to claim 70, wherein the overall thickness is between approximately 1 μm and approximately 4 μm.

72. (New) The multilayer structure according to claim 60 wherein:

the hard material individual layers include one of a metal, a metal carbide, a metal nitride, a metal silicide, a metal carbosilicide, and a metal siliconitride, and

the carbon individual layers include one of a carbon containing hydrogen and an amorphous hydrogen-free carbon.

73. (New) The multilayer structure according to claim 63, wherein:

the hard material individual layers are C-(WC) layers, and

the carbon individual layers are carbon containing hydrogen layers.

74. (New) The multilayer structure according to claim 63,

wherein:

the hard material individual layers are metal carbide layers, and

the carbon individual layers are metal carbide layers.

75. (New) The multilayer structure according to claim 63, wherein:

the hard material individual layers include one of a metal, a metal carbide, a metal nitride, a metal silicide, a metal carbosilicide, and a metal siliconitride, and

A2 cont

the silicon individual layers include one of a silicon containing hydrogen and an amorphous hydrogen-free silicon.

76. (New) The multilayer structure according to claim 60, wherein a combination of the hard material individual layers and the one of the carbon individual layers and the silicon individual layers includes at least one of silicon, boron, nitrogen, oxygen, carbon and a metal, and wherein boron and carbon not being simultaneously present in the individual layers.

77. (New) The multilayer structure according to claim 60, wherein one of a machining tool and a non-cutting shaping tool is coated with the multilayer structure.

Remarks

This Preliminary Amendment cancels, without prejudice, original claims 1-35 in the underlying PCT Application No. PCT/DE98/01610. This Preliminary Amendment also cancels, without prejudice, substitute claims 1, 10, and 20, and adds new claims 36-77. The new claims conform the